UNITED STATES DISTRICT COURT

DISTRICT OF NEW MEXICO

THE GRAND CANYON TRUST and SIERRA CLUB,

Plaintiffs,

vs.

CV 02-552 BB/ACT (ACE)

PUBLIC SERVICE COMPANY OF NEW MEXICO,

Defendant.

FINAL PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW OF DEFENDANT PUBLIC SERVICE COMPANY OF NEW MEXICO FOR LIMITED TRIAL ON LIABILITY

COMES NOW Defendant Public Service Company of New Mexico ("PNM"), through its counsel of record, and pursuant to the Court's instructions, submits its proposed Final Proposed Findings of Fact and Conclusions of Law with respect to the limited trial on liability held on November 17, 18 and 19, 2003 in the above-numbered cause. A 3.5-inch floppy disk with these Final Proposed Findings of Fact and Conclusions of Law in WordPerfect format is submitted to the Court contemporaneously herewith. To the extent that any findings of fact herein are more properly considered conclusions of law, they shall be deemed to be conclusions of law. To the extent that any conclusions of law herein are more properly considered findings of fact, they shall be deemed to be findings of fact.

169

PROPOSED FINDINGS OF FACT

General Background and Undisputed Facts

1. This is a citizens suit under the federal Clean Air Act, 42 U.S.C. § 7601 through § 7671Q ("CAA"),[1] brought by the Sierra Club and Grand Canyon Trust ("Plaintiffs") against PNM. (Plaintiffs' Complaint)

2. PNM is a New Mexico corporation and is part owner and the operating agent for the San Juan Generating Station ("San Juan") located approximately 15 miles from Farmington, New Mexico. (Goodman p. 85; Pre-Trial Order Stipulated Facts 1, 2 and 5)[2]

3. San Juan consists of four separate generating units with a cumulative electric generating capacity of approximately 1,600 megawatts. A megawatt is equal to the power of one million watts. (Pre-Trial Order Stipulated Facts 6)

4. San Juan Units 1, 3 and 4 are fossil fuel fired steam-generating units with a heat-input rate greater than 73 MW (250 million Btu per hour). (Goodman pp. 83-4).

5. Construction on San Juan Units 1, 3 and 4 commenced after August 17, 1971, and before September 18, 1978. (Goodman p. 83).

6. San Juan Unit 2 was the first unit completed and commenced commercial operation in 1973. San Juan Unit 1 was completed next and commenced commercial operation in 1976. San Juan Unit 3 commenced commercial operation in 1979. San Juan Unit 4 was the final unit completed and commenced commercial operation in 1982. (Goodman pp. 83-4)

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[1] Hereinafter citations are to the section of the CAA itself.

[2] References to the trial transcript are to witness and page numbers.

7. PNM; Tucson Electric Power Company; the City of Farmington, New Mexico; M-S-R Public Power Agency (whose members are Modesto, Santa Clara and Redding, California); Los Alamos County, New Mexico; Southern California Public Power Authority; the City of Anaheim, California; Utah Associated Municipal Power Systems; and Tri-State Generation and Transmission Association, Inc. each own varying undivided interests in one or more of the four units of San Juan. (Goodman pp. 84-5)

San Juan Title V Operating Permit

8. Plaintiffs allege that PNM has violated its Title V Operating Permit P062 ("Operating Permit P062") by allowing opacity readings, as measured by continuous opacity monitor systems ("COMS") in the stacks of San Juan Units 1, 3 and 4, to exceed 20 percent. (Plaintiffs' Complaint Count I)

9. The sole evidentiary support for the Plaintiffs' claims are Operating Permit P062 and certain quarterly excess emissions reports submitted by PNM to the New Mexico Environment Department ("NMED"). (Plaintiffs' Exhibits 2 and 3)

10. PNM is the named permittee in Operating Permit P062 that was issued on August 7, 1998 by the NMED. (Pre-Trial Order Stipulated Facts 3, 12)

11. Under the terms of Operating Permit P062, San Juan is allowed to emit into the atmosphere on an annual basis approximately 5,000 tons of particulate matter ("PM") emissions, 38,800 tons of nitrogen oxides ("NO_x") emissions, and 35,800 tons of sulfur dioxide ("SO_2") emissions. (Pre-Trial Order Stipulated Facts 12)

12. San Juan emits less of each of the foregoing emissions than is allowed under Operating Permit P062. (Goodman pp. 87-8). Indeed, there is no allegation in this

lawsuit that PNM has allowed any pollutants to be emitted into the atmosphere in excess of legal limits. (Plaintiffs' Complaint)

13. In the case of a coal-fired power plant such as San Juan, PM emissions are made up primarily of tiny coal ash particles from the combustion process. (Huffman pp. 114-15; Nichols p. 439-40)

14. PM emissions can be a cause of elevated opacity readings by the COMS located in the stacks of San Juan Units 1, 3 and 4. (Farley p. 268; Nichols p. 440)

15. "Opacity" is the "degree to which emissions reduce the transmission of light and obscure the view of an object in the background." 40 C.F.R. § 60.2 (Reg. App. PNM-1813D).

16. Operating Permit P062 sets out the Subpart D opacity standard of 20 percent except for one six-minute period per hour of not more than 27 percent opacity in Condition 3.2.1. (Farley pp. 244-25; Norem pp. 211-12; Plaintiffs' Ex. 2, p.12)

17. Prior to issuance of Operating Permit P062, PNM operated under the terms of a modified preconstruction (New Source Review or NSR) permit ("NSR Permit 63-M-2") issued by the NMED in 1997. (Norem pp. 187-88; PNM-1829)

18. San Juan is still subject to the provisions of NSR Permit 63-M-2 and any significant modification to San Juan would require a modification to NSR Permit 63-M-2. (Norem p. 202; Fowler p. 530)

19. PNM's Operating Permit P062 incorporates by reference Condition 1.9 of NSR Permit 63-M-2 as follows:

> 1.9 The following conditions of NSR permit number 63-M02 are incorporated into this permit [Operating Permit P062] by reference:

Condition 1- Modification and Operation;

Condition 2- Emissions Rates (except entire facility emissions limits);

Condition 5- Reporting

Condition 6- Compliance Test Methods

Compliance with this permit [Operating Permit P062] is sufficient to comply with the other terms of that NSR permit . . . .

(Norem p. 199; Fowler p. 532; Plaintiffs' Ex. 2, pp. 5-6)

20. Condition 1 of NSR Permit 63-M-2 as incorporated by reference into Operating Permit P062 states that Units 1, 3 and 4 are subject to :

> Part 60. Subpart A – General Provisions, and Subpart D and shall comply with both the notification requirements in Subpart A and the specific requirements in Subpart D.

(Norem p. 199; PNM-1829, p. 2)

21. Condition 6 of NSR Permit 63-M-2 as incorporated by reference into Operating Permit P062 states that compliance tests:

> . . . shall be conducted in accordance with . . . Method 9 and the procedures for opacity, contained in CFR Title 40, Part 60, Appendix A, and with the requirements of Subpart A.

(PNM-1829, p.9)

22. The Statement of Basis prepared by the NMED to accompany Operating Permit P062 identifies Method 9 as the applicable "Testing" method for the Subpart D opacity standard. (Norem p. 205-06; Fowler p. 535; PNM-1870, p.5)

23. Operating Permit Condition 3.4.2.1 provides that "[f]or opacity in order to demonstrate compliance with 40 C.F.R. 60, Subpart D, Section 60.42(a) 2, opacity shall

be continuously monitored in accordance with Section 60.45(a)." (Plaintiffs' Ex. 2 at 15-16)

24. The foregoing language allows the use of COMS as the means for measuring opacity during the performance of an EPA Method 5 test as provided in § 60.11, as opposed to using a more labor intensive EPA Method 9 test. (Huffman pp. 171-72; Norem pp. 192-92, 198-99, 210-11)

25. The NMED never suggested to PNM prior to the filing of the present action that the COMS were the method of determining compliance with the applicable opacity standard under Operating Permit P062. (Norem pp. 196-97, 202, 221)

26. On many occasions following issuance of Operating Permit P062, NMED reviewed PNM's "excess emissions" reports and determined that San Juan was in "compliance" despite opacity readings in excess of twenty percent. (PNM-1835; PNM-1843; PNM-1845; PNM-1854; PNM-1857; PNM-1861; PNM-1865)

27. In June 2000, after reviewing PNM's quarterly "excess emissions" reports, the NMED requested follow-up PM testing and then determined upon review of the PM test reports that San Juan had "satisfied their permit and regulatory requirements" despite reporting opacity readings in excess of twenty percent. (Farley 307-08; PNM-1858)

28. PNM did not object to or appeal the provisions in Condition 3.4.2.1 of Operating Permit P062 because PNM did not understand that the NMED was adopting COMS as the applicable method for determining compliance with the twenty percent opacity standard other than during Method 5 testing. (Norem pp. 196-97)

29. EPA Method 9 is the applicable reference test for determining compliance with Operating Permit P062 and with the requirements of CFR Title 40, Part 60,

Appendix A and Subpart A. (Norem pp. 191-92; Fowler p. 535; (Plaintiffs' Ex. 2, pp. 5-6; PNM-1829, p. 9; PNM-1870, p. 5)

30. The recent interpretation by the NMED, and the Plaintiffs' interpretation that Condition 3.4.2.1 in Operating Permit P062 specifies COMS as the applicable compliance method for opacity, is a *post hoc* reinterpretation of the Permit. (Norem 203-06; Fowler p. 543)

San Juan Pollution Control of PM Emissions and Opacity

31. San Juan Units 1, 3 and 4 comply with the Subpart D and PM and opacity standards by controlling PM with pollution control devices known as electrostatic precipitators ("ESPs"). (Huffman pp. 113, 117)

32. The ESPs at San Juan are up to 99.7% efficient in the removal of PM from power plant emissions during normal operating conditions. (Huffman pp. 113, 119)

Continuous Opacity Monitors

33. PNM monitors and records the opacity of emissions from San Juan Units 1, 3 and 4 on a continuous basis using COMS that are located in the stack of each unit as required in 40 C.F.R. § 60.13. (Pre-Trial Order Stipulated Facts 15; Huffman p. 137)

34. The COMS in the stacks of San Juan consist of "dual pass" transmissometers that continuously measure, except for periods of downtime, the amount of light that can pass through the emissions of the power plant before such emissions are emitted into the atmosphere. (Huffman 137; Farley pp. 246-47, 268; PNM-1874; Stipulated Facts 16)

35. The COMS generate printed data showing opacity readings expressed in percentage opacity (ranging from zero percent to 100 percent) on a six-minute block average basis to the nearest two decimal places. (Farley pp. 238-41, 265)

36. COMS required to be installed under the NSPS must comply with Performance Specification 1 (PS-1) which establishes criteria for manufacturer design criteria and for installation. (Farley p. 247).

37. COMS are not required to be 100 percent accurate because the installation criteria under PS-1 and the operational parameters for COMS allow for certain "error bands." Those error bands can result in a positive bias of as much as 7.5 percent opacity. (*i.e.*, a 27.5% COMS reading can be equated to a 20% actual opacity reading). (Farley pp. 261-69, 368; Roberson p. 398)

38. COMS readings are generated on a continuous basis, including periods of non-representative conditions such as startup, shutdown, malfunction and load changes. (Farley p. 272)

39. PNM uses the COMS in the stacks of San Juan Units 1, 3 and 4 as an indicator of the performance of the ESPs. (Norem pp. 190-91)

Quarterly Excess Emissions Reporting

40. PNM collects and reviews the COMS data on a daily basis, identifies the recorded opacity readings in excess of 20 percent for San Juan Units 1, 3 and 4 and submits quarterly reports to the NMED itemizing the readings in excess of 20 percent opacity, together with a notation identifying the cause for the elevated reading. (Farley pp. 235-41; Plaintiffs' Ex. 3)

41. The quarterly excess emissions reports do not contain any data from EPA Method 9 testing. (Farley p. 238)

42. PNM has been reporting opacity readings greater than twenty percent to the NMED since the early 1980s in accordance with the excess emissions reporting requirements in Subparts A and D. (Farley p. 235)

43. PNM has included COMS readings of greater than 20.00 percent in its quarterly excess emissions reports, although PNM is authorized to exclude those COMS readings with a value of 20.5 percent or less by rounding down these readings ("rounded periods"). (Farley pp. 244-45; Trial Stipulation, p. 495)

44. As a result, PNM has reported many rounded periods as excess emissions when they were not required to be reported. (Farley pp. 244-45)

45. Although PNM is allowed to exclude one opacity reading per hour between 20 percent and 27.5 percent ("free periods"), in most cases PNM has not excluded such periods from its quarterly excess emissions report. (Farley pp. 244-45; Plaintiffs' Exhibit 2)

46. As a result of the foregoing, PNM over-reports excess emissions of opacity in the quarterly reports submitted to the NMED. (Farley pp. 244-45)

47. PNM included the "free periods" and "rounded periods" in its quarterly excess emissions reports to the NMED because PNM does not regard the COMS readings as determinative with respect to opacity compliance. (Farley p. 246)

48. PNM's certification on its quarterly reports to the NMED refers to the fact that the recorded COMS readings are accurately reported to the NMED without deliberate alteration or omission. (Huffman p. 143)

49. The certification on PNM's quarterly reports is not a certification that the COMS are taking error-free readings, that the readings are indicative of a violation of the applicable opacity standard, or that readings indicate what would have been recorded with Method 9. (Huffman p. 143)

50. PNM also submits its quarterly excess emission reports to Region 6 of the United States Environmental Protection Agency ("EPA") in Dallas, Texas. (Farley p. 241)

51. PNM is a charter member, and one of only three coal-fired power plants in the United States, that participates in the EPA's Performance Track Program. (Goodman pp. 89-90; Farley p. 242)

52. In order to participate in the EPA's Performance Track Program, a company has to have an exemplary compliance history. (Farley p. 242)

53. The EPA has taken no formal action against PNM with respect to the opacity emissions in excess of twenty percent and PNM is still a participant in the EPA's Performance Track Program. (Farley p. 242)

54. Prior to the filing of this suit, neither NMED nor EPA had ever indicated that that PNM's reported COMS data were being treated as compliance method data. (Norem pp. 196, 202)

55. The NMED awarded its Green Zia Award for pollution prevention to San Juan in 2002 and again in 2003. (Goodman p. 89)

EPA Method 9

56. When EPA established the Subpart D PM standard in 1970-71, EPA conducted a review of available PM control technology to determine the "best demonstrated technology." (Roberson p. 394, 398-99)

57. Because the Subpart D PM and opacity standards were both developed as "periodic" standards, EPA promulgated with the final standards specific compliance methods -- Methods 5 (for PM) and Method 9 (for opacity) -- that were consistent with the periodic methods used to develop the standard. (Reg. App. PNM-1814[3]; PNM-1830, p. 7)

58. The method historically used by sources and inspectors to measure the opacity of emissions is the periodic method that was used to establish the Subpart D standard and was promulgated as EPA Method 9 with the initial NSPS, in 1971. (Roberson p. 394; Farley p. 320)

59. Although EPA required installation of COMS under Subpart D, EPA made clear in the preambles accompanying rules regarding COMS and other documents that the data from COMS were not to be used to determine compliance, but instead were to be used to determine whether the PM control device was being properly operated and maintained and to target inspections. (Reg. App. PNM-1814; PNM-1830 p. 7)

60. EPA eventually developed instructions and checklists in the form of the *Handbook for the Review of Excess Emission Reports*, EPA-340/1-86-011 (May 1986) to aid regulators' review of COMS data and targeting of additional testing and inspections. (PNM-1826)

[3] References to PNM exhibits denoted as "Reg. App." are to the exhibits submitted for the Court's convenience as a regulatory appendix.

61. EPA Method 9 is performed by a human observer who is trained and certified to perform a visual measurement of the opacity of a gas stream exiting the stack of an emissions source. (Farley p. 320; Roberson p. 400; Reg. App. PNM-1813G)

62. A valid Method 9 reading requires at least 24 individual 15-second observations (recorded to the nearest 5 percent opacity) which are averaged to obtain test results. (Farley pp. 322-23; Reg. App. PNM-1813G)

63. Under Method 9 procedures, a plume with a true opacity of 22 percent during any individual 15-second reading would be recorded as having 20 percent opacity. (Farley p. 323; Reg. App. PNM-1813G)

64. The Method 9 procedure for certifying observers involves observation of 50 plumes (25 white plumes and 25 black plumes) generated by a smoke generator and comparison of the observers' readings to readings from a "smoke meter," also known as a transmissometer, that is calibrated prior to each smoke reading test. (Farley pp. 320-21; Reg. App. PNM-1813G)

65. The plumes that are produced by the smoke generator are made up of smoke and do not contain condensed water vapor. (Farley p. 321)

66. EPA Method 9 readers are not trained to measure the opacity of condensed water vapor, but instead are instructed to read plumes at the point where any condensed water vapor has dissipated. (Farley pp. 321, 323-24)

67. A reader's recorded observations can differ from the recently calibrated smoke meter readings by as much as 15 percent opacity on any single 15-second reading and by as much as 7.5 percent opacity on average (in terms of absolute error) for each category of 25 plumes and nonetheless pass the certification. (Farley p. 322)

68. A Method 9 reader performing within the specifications for certification could, in comparison to roughly 2 six-minute COMS readings of 27 percent, report an average value for the same period anywhere between 19.5 percent (reported as 19 percent after rounding) and 34.5 percent (reported as 34 percent after rounding), with the potential differences for a single six-minute period being even higher. (Roberson p. 397; Reg. App. PNM-1813G)

69. Many factors influence plume opacity readings under EPA Method 9, including particle density, particle refractive index, particle size distribution, particle color, plume background, path length, distance and relative elevation to stack exit, sun angle, and lighting conditions. (PNM-1825, p. 8)

70. As a result, Method 9 contains a number of requirements for conducting opacity readings that inherently limit the frequency at which (and conditions under which) such tests can be performed, such as the requirement that the sun be oriented within a 140° sector to the observer's back. (Farley p. 320; Reg. App. PNM-1813G)

71. When EPA performed tests to evaluate the potential biases in Method 9 under a variety of conditions, EPA found potential biases that were both positive and negative. (Reg. App. PNM-1813G; PNM-1825, p. 8)

72. Because only positive bias increases the possibility that a source would be cited for an opacity violation due to observer error, EPA limited its discussion in Method 9 to the potential positive biases, which EPA determined to be 7.5 percent opacity. (Roberson pp. 395-6; Reg. App. PNM-1813G; PNM-1825, p.8)

73. When considering potential bias, Method 9 recognizes that a true opacity of 19.5 percent could be read as 27 percent opacity under Method 9, and requires that fact to be taken into account in any compliance determination. (Roberson p. 396; 1813G)

74. Method 9 requires that opacity readings be taken at a point in the plume that is not affected by condensed water vapor so that condensed water vapor is not considered when measuring opacity. (Farley pp. 323-24; PNM-1813G)

75. To ensure that tests are properly performed and conditions during the test are representative of normal operation, EPA's *Quality Assurance Handbook for Air Pollution Measurement* includes a section 3.12 that outlines suggested quality assurance procedures for Method 9 observers, including determining whether the sources were operating normally at the time of the Method 9 evaluation. (PNM-1822; PNM-1825)

76. Historically, EPA Method 9 Tests have been conducted at San Juan during various times, including certain annual NMED inspections or at other times when PNM wanted to verify the performance of San Juan's PM pollution control equipment. (Farley p. 324; PNM-1833; PNM-1836; PNM-1844)

EPA Method 9 vs. COMS Equivalency

77. Between May 17, 1998 and July 21, 2000 a total of nine Method 9 tests was performed on the various units at San Juan. (Farley pp. 324-29; PNM-1833; PNM-1836; PNM-1844; PNM-1859; PNM-1879)

78. There is a significant difference in the opacity readings for San Juan Units 1, 2, 3 and 4 obtained through Method 9 tests when compared to the COMS readings for the same six-minute periods. (Farley p. 335; Roberson p. 405-09; PNM-1879)

79. A comparison of the Method 9 tests and contemporaneous COMS readings from San Juan Units 1, 2, 3 and 4 demonstrate that a COMS reading does not tell what a Method 9 would have read for the same plume and that any particular COMS reading could be above or below a concurrent Method 9 reading by an amount sufficient to affect compliance determinations. (Farley p. 335; Roberson pp. 405-09; PNM-1879)

80. The differences between the Method 9 and COMS readings from one test to the next do not appear to follow any particular pattern and cannot be explained by any one cause. (Roberson pp. 405-09; PNM-1879)

81. The differences between the Method 9 and COMS readings at San Juan Units 1, 3 and 4 are consistent with the fact that the data are collected using two very different analytical measurement methods each of which has its own inherent biases and errors that could cause particular readings to be above or below the other. (Roberson pp. 399-401; PNM-1879)

82. These differences must be taken into account when determining whether a Method 9 would have recorded a possible violation of the applicable standard. (Roberson pp. 396-98)

83. Plaintiffs offered no evidence establishing any relationship between opacity readings generated by the COMS in the stacks of San Juan Units 1, 3 and 4 and opacity readings generated by the applicable EPA reference test for determining compliance with the applicable opacity standard, EPA Method 9. (Trial Transcript)

EPA Method 5

84. The method for determining compliance with the Subpart D PM standards -- EPA Method 5 -- is a periodic manual method of sampling and analysis conducted by a

test crew that extracts a sample of gas from the stack and collects a sample on a filter. (Huffman pp. 136-37; Farley p. 337; Nichols pp. 468-69; Reg. App. PNM-1813F; Reg. App. PNM-1814)

85. Because condensed water vapor that forms in the stack is evaporated in the Method 5 measurement process, only those substances that are chemically combined with water are measured as, and fall within the definition of, PM. Water that is not chemically combined (*i.e.*, uncombined water), is not measured as PM. (Huffman p. 136; Farley p. 338; Reg. App. PNM-1813F)

86. When Method 5 testing for PM is conducted under the NSPS it is called "performance testing" and is performed upon initial startup of the unit and periodically thereafter under "representative conditions." (Farley pp. 272, 337-38; Reg. App. PNM-1813D and E).

87. Performance testing by means of an EPA Method 5 upon initial startup of the unit following completion of construction confirms that the installed control equipment (ESPs in this instance) will meet the applicable PM standard. (Reg. App. PNM-1813F; Reg. App. PNM-1814; PNM-1830)

San Juan Control of SO_2 Emissions

88. San Juan Units 1, 3 and 4 employ a wet flue gas desulferization ("FGD") system to remove SO_2 from air emissions. (Goodman p. 92; Huffman p. 114; Farley p. 291)

89. The FGD system used at San Juan is referred to as a wet limestone system or limestone "scrubber" because it works by spraying a reactive slurry of water and

calcium carbonate into the hot gas stream from the coal-fired boilers. (Huffman pp. 114, 130; Farley p. 291)

90. The reactive slurry reacts with the SO_2 in the flue gas and removes it from stack emissions. (Huffman p. 114; PNM-1801)

91. The wet limestone system became operational in mid-1998 and cost approximately $75 million to construct and install. (Goodman p. 88; Huffman p. 131)

92. The FGD currently removes in excess of eighty percent of the SO_2 emissions compared to a removal rate of about fifty-percent with the prior Wellman-Lord system. (Huffman pp. 130-31)

93. The FGD increases the amount of condensed water vapor that is present in the emission gases in the stacks in San Juan Units 1, 3 and 4. (Farley pp. 290-91; Huffman p. 130; Nichols p. 446)

Water Droplet Formation in the Stacks

94. A primary cause of elevated opacity readings at San Juan during the period covered by this suit is water vapor in the stacks that condenses to form small water droplets that are measured by the COMS as opacity. (Farley pp. 290-91; Nichols p. 438)

95. PNM refers to this phenomenon as condensed water vapor, water droplets, or a saturated stack or a wet stack condition. (Farley pp. 272-74, 292)

96. The moisture in the flue gas includes not only moisture from the FGD system, but also about seven percent moisture from the coal combustion air. (Nichols p. 446)

97. The COMS in each stack of San Juan Units 1, 3 and 4 were installed and certified consistent with the requirements of the version of PS-1 that was in effect when the monitors were installed. (Pre-Trial Order Stipulated Facts 17; Farley p. 247)

98. The version of PS-1 that was in effect at the time the COMS were originally installed in San Juan Units 1, 3 and 4 in the early 1980s did not prohibit installation of COMS in a location where condensed water is present, and the revised version of PS-1 that was in effect when the current monitors were installed exempted COMS installed at existing locations from a new requirement to provide a location free of condensed water vapor. (Farley p. 247).

99. When water in the stacks is in a vapor or gaseous state, it is invisible and does not scatter light and, therefore, is not read as opacity by the COMS in the stacks. (Nichols p. 472, 475)

100. However, when water vapor condenses to form small water droplets in the stacks, these water droplets are measured by the COMS as opacity. (Farley p. 268; Nichols p. 440)

101. When conditions at the COMS location in the stacks for San Juan Units 1, 3 and 4 are such that the moisture in the stack gases condenses to form water droplets, it is akin to having fog in the stacks. (Farley p. 274; Nichols p. 491)

102. Although COMS can measure the translucency of gases, COMS cannot discern what is causing the opacity and cannot distinguish between light attenuation (or scatter) caused by condensed water vapor and light attenuation (or scatter) caused by PM in the flue gas. (Farley p. 302; Nichols p. 472).

103. Saturated stack conditions most commonly occur at San Juan when the flue gas or emissions temperature conditions are below 135 F. (Farley p. 292; PNM-1839)

104. There is a direct correlation between lower stack temperatures and elevated opacity readings at San Juan Units 1, 3 and 4. (Farley pp. 293-99; PNM-1839)

105. A portion of the untreated flue gas is bypassed around the FGD in order to mix with and reheat the flue gas leaving the FGD system to ensure that the gas rises in the stack. (Huffman pp. 132, 134-36; Farley pp. 291-92; Nichols p. 443; PNM-1790; PNM-1803)

106. This bypass gas is also used to raise the flue gas temperature above the water vapor saturation temperature. (Huffman p. 144; Farley pp. 291-92; PNM-1790; PNM-1803)

107. The less flue gas that is bypassed around the scrubber, the greater the SO_2 removal efficiency. (Huffman pp. 147-48; Farley p. 292-99; Nichols p. 456; PNM-1839)

108. If the amount of bypass is not sufficient to raise the flue gas temperature above the water vapor saturation temperature, the water vapor will condense as water droplets in the stack. (Huffman pp. 145-46; Farley pp. 290-92; Nichols pp. 455-56; PNM-1835)

109. Condensation can occur at almost any point in the ductwork or stack downstream of the FGD, including before the COMS location, at the COMS location, or after the COMS location. (Nichols pp. 437-38, 445-46, 470-71)

110. Because the COMS measurement line passes through the middle of the stack, if the condensing conditions are stratified throughout the gas stream (*i.e.*, because

some areas are slightly cooler than others) the effects on the COMS readings could vary even as compared to temperature readings. (Nichols pp. 438, 445-46; PNM-1806)

111. In order to condense, vapor requires a condensation nucleus which is a previously formed substance upon which to physically condense. (Nichols p. 449)

112. Rain, hail, sleet, snowflakes, and fog form by condensing on sub-micron particles (condensation nuclei) such as dust particles, cosmic dust, sulfate particles and or other substances that are suspended in the atmosphere. (Nichols pp. 448-450)

113. The primary condensation nuclei in power plants, like San Juan, that burn low sulfur coal, are the sub-micron fly ash particles not collected by the ESP. (Nichols p. 450)

114. After exiting the stack, the condensed water formed around the condensation nuclei evaporates into the atmosphere leaving only the sub-micron fly ash particles that are too small to be detected by the COMS or to be seen by the human eye. (Nichols pp. 450, 466-67)

115. Although the condensed water vapor physically adheres to the sub-micron particles, the particles are not chemically combined with the water and, thus, the condensed water vapor is "uncombined water" under the NSPS definition of PM and it would evaporate before being read under Method 5 or Method 9. (Nichols pp. 451-53)

116. Coal-fired power plants will also have some trace amounts of acid gas (such as sulfur trioxide or SO_3) in the gas stream. (Nichols p. 446-47)

117. Between 0.4% and 1% of the SO_2 in a gas stream will oxidize into SO_3 and SO_3 in turn will chemically combine with water vapor to form H_2SO_4, which does

not evaporate in a Method 5 test and would be measured as PM, but in very small quantities. (Nichols pp. 446-47, 462-63, 468)

118. H_2SO_4 in stack emissions would be measured as opacity with a Method 9 test. (Nichols pp. 454, 468-69; Farley p. 338)

119. For units like San Juan that burn low sulfur fuel, the amount of SO_2 in the gas stream is already so low that the amount of SO_3, and subsequently H_2SO_4 acid droplets, will be negligible as compared to the amount of condensed, uncombined water. Such acid droplets typically condense in flue gas at much higher temperatures (e.g., above 250 F) and thus would not be a major component in an increase in opacity that is seen at lower temperatures. (Nichols pp. 447, 462-464, 468-69)

120. To minimize the amount of condensed water vapor in the stack, the plant operator at San Juan attempts to adjust the amount of bypass gas to maintain a temperature above saturation while still maximizing the amount of SO_2 removal. (Huffman pp. 149-50; Nichols pp. 436, 443)

121. The plant operator determines how much flue gas to bypass by monitoring the output from a temperature monitor (or thermocouples) located in the stack. However, the adjustment process is slow and condensation can be difficult to control if the flue gas is very close to saturation. (Nichols pp. 443-46)

122. During periods of operation at or near moisture saturation, the thermocouple readings can be affected by condensation and moisture droplets and a plant operator reacting to those readings may end up providing either too much or too little bypass until the thermocouple readings stabilize. (Nichols pp. 444-45, 464)

123. Controlling the condensation process in the stacks at San Juan becomes even more difficult during startup, shutdown, or load changes or ramping up or down. (Huffman pp. 152-155)

124. PNM identifies periods of "excess emissions" in its quarterly reports as being caused by condensed water vapor (or any similar description) based on a combination of factors including available stack temperature data and the nonexistence of some other identifiable cause of the "excess emission." (Farley pp. 300-01)

125. PNM notified the NMED in both the quarterly excess emissions reports and in separate correspondence that the condensation of water vapor was causing "higher than normal" opacity readings. (Farley pp. 302-06; PNM-1834; PNM-1840)

126. In January 1999, PNM wrote the NMED with the results of PNM's investigation into a solution to the condensed water vapor issue. (Farley pp. 307-12; PNM-1841)

127. In July 1999, PNM informed NMED of its progress in reducing the number of periods of condensed water vapor. (Farley pp. 315-319; Plaintiffs' Ex. 3, p. 35)

128. Over time, PNM has continued to improve operator control to reduce the number of periods of "excess emissions" due to condensed water vapor. (Goodman pp. 94-5; Farley pp. 314-19; PNM-1906; PNM-1907; PNM-1908; PNM-1909; PNM-1910; PNM-1911)

129. Opacity caused by condensed, uncombined water vapor would not be read as opacity in a properly conducted Method 9 or as PM in a Method 5 test. (Farley pp. 321, 323-24, 338; Nichols p. 468)

130. COMS do not provide accurate readings of regulated opacity during periods when condensed water vapor is present in the stack. (Farley pp. 300-02)

San Juan COMS Malfunctions and Inaccuracies

131. COMS are subject to a variety of potential errors such as misalignment and dirty optics which all tend to overstate actual opacity. (Farley pp. 368)

132. The present COMS in the stacks of San Juan Units 1, 3 and 4 replaced previous COMS that were in place in the stacks since the late 1970s and early 1980s. (Farley pp. 248-60)

133. The COMS on Unit 1 was initially installed around 1979. When that monitor failed in May 1998 and PNM was unable to get replacement parts. PNM replaced the monitor with a new monitor installed in the same location in October 1998. The new monitor was tested in late November 1998. (Farley pp. 248-50)

134. In the first quarter of 1999, PNM discovered that an error had been made in the monitor path length of the new COMS installed on Unit 1, which resulted in COMS readings of between five and eight percent higher than actual for the period before March 4, 1999. (Farley pp. 269-271; Plaintiffs Ex. 3, p. 20)

135. During the fourth quarter of 1999, the COMS in the stack of Unit 1 also experienced higher than normal opacity readings due to malfunction as evidenced by the COMS' failure of the contamination and daily drift tests. (Farley pp. 250-52; PNM-1850)

136. As a result of the failure of calibration and contamination tests, the COMS in Unit 1 was replaced again in early 2000. The new monitor was put into service on

January 17, 2000 and PS-1 certification testing was completed on March 22, 2000. (Farley pp. 245-54; PNM-1838; PNM-1851; PNM-1852; PNM-1855)

137. The COMS in Unit 1 was providing erroneous opacity readings during the fourth quarter of 1999 until it was replaced. (Farley pp. 250-52)

138. The COMS on Unit 3 was initially installed around 1982. The monitor was replaced during an annual maintenance outage in March 2000 due to concerns about age and accuracy. The new monitor was put into service and immediately failed. The current COMS was installed on March 11, 2000 and PS-1 certification testing was completed on March 28, 2000. (Farley pp. 256; PNM-1853; PNM-1856)

139. The COMS on Unit 4 was initially installed around 1982. The monitor was replaced during an annual maintenance outage in October 1999 due to concerns about age and accuracy. The new monitor was put into service on October 28, 1999 and testing was completed on December 14, 1999. (Farley pp. 259-60; PNM-1846; PNM-1848)

140. San Juan has experienced alignment problems with the COMS at San Juan Units 2 and 4. (Farley p. 264)

141. The COMS at San Juan also operate in some cases when the COMS or associated equipment, such as the data logger or computer are malfunctioning resulting in erroneous COMS data. (Farley p. 271)

142. COMS readings at San Juan generated during times of COMS malfunction cannot be relied upon to provide accurate opacity readings. (Farley pp. 251-52)

Unit Startup and Shutdown and Malfunction

143. Plaintiffs concede that COMS readings taken during periods of unit startup, shutdown and malfunction cannot serve as the basis for enforcement action. (Plaintiffs' Pre-Trial Brief)

CONCLUSIONS OF LAW

Jurisdiction

1. U.S. District Courts have jurisdiction, without regard to the amount in controversy or the citizenship of the parties, over citizen suits brought under CAA § 304. CAA § 304(a).

2. Venue for any action alleging violation by a stationary source of an emission standard or limitation may be brought only in the judicial district in which the source is located. CAA § 304(c).

3. This Court has jurisdiction over the parties to this proceeding with respect to Count I of the Plaintiffs' Complaint and venue is proper in the United States District Court for the District of New Mexico.

The Clean Air Act

4. Section 111 of the CAA authorizes the EPA to adopt "technology based" New Source Performance Standards ("NSPS") for "new sources" in listed industrial categories. CAA § 111 (Reg. App. PNM-1813A).

5. New stationary sources must comply with any NSPS promulgated (or proposed) by the EPA for that source type as of the time the source commenced construction. CAA § 111(a)(2), (b)(4) (Reg. App. PNM-1813A).

6. Each NSPS must be achievable through application of the "best demonstrated controlled technology" (BDT) available at the time the standard was

proposed. CAA § 111 (Reg. App. PNM-1813A). The NSPS are not health-based standards.

7. To be enforceable, NSPS must include a method for determining compliance. CAA § 111(h)(2) (Reg. App. PNM-1813A). The method for determining compliance with an emission standard is a substantive part of the standard and a change in that method can affect the level of performance required by the standard, even though the numerical portion of the standard has not changed. *Appalachian Power v. EPA*, 208 F.3d 1015, 1027 (D.C. Cir. 2000). *Clean Air Implementation Project v. EPA*, 150 F.3d 1200, 1203 (D.C. Cir. 1998); *Portland Cement Assoc. v. Ruckelshaus*, 486 F.2d 375, 401 (D.C. Cir. 1973); *Donner Hanna Coke Corp. v. Costle*, 464 F.Supp. 1295, 1305 (W.D. N.Y. 1979).

8. A source that satisfies the applicable NSPS upon initial commencement of operation cannot be required to meet a more stringent NSPS, unless the source is subsequently modified. CAA § 111(a)(4), (b)(4) and (6) (Reg. App. PNM-1813A).

9. CAA § 111 authorizes EPA to delegate to states authority to "implement and enforce" the NSPS, but not to revise those standards. CAA § 111(c)(1) (PNM-1813A). EPA has delegated to the NMED the authority to enforce and implement, but not to revise the NSPS.

The Applicable Opacity Standard and Its Elements

10. The NSPS for large fossil-fuel-fired boilers capable of generating more than 73 megawatts (250 million Btu per hour) which commenced construction after August 17, 1971, but before September 18, 1978, are codified in 40 C.F.R. Part 60 Subpart D. 40 C.F.R. §§ 60.40 and 60.40a (Reg. App. PNM-1813E).

11. The NSPS "General Provisions" that are applicable to all the NSPS, including specific procedures for determining compliance with those standards, are codified in Subpart A to Part 60. 40 C.F.R. §§ 60.1 - 60.19 (Reg. App. PNM-1813D).

12. Based on their size, fuel use, and the dates upon which construction was commenced, San Juan Units 1, 3 and 4 are regulated under the NSPS Subparts A and D.

13. Subpart D establishes a standard of performance for PM that limits both PM and "opacity." 40 C.F.R. § 60.42(a)(1) (Reg. App. PNM-1813E).

14. "Particulate matter" is "any finely divided solid or liquid material, other than uncombined water, as measured by the reference methods specified under each applicable subpart, or an equivalent or alternative method." 40 C.F.R. § 60.2 (Reg. App. PNM-1813D). Particulate matter is an air pollutant under the CAA.

15. "Opacity" is not a pollutant under the CAA or the New Mexico Air Quality Coal Act, but is rather the "degree to which emissions reduce the transmission of light and obscure the view of an object in the background." 40 C.F.R. § 60.2 (Reg. App. PNM-1813D).

16. Subpart D establishes a PM standard for coal-fired units of 0.10 lb per million Btu as determined by PM "performance testing" conducted using EPA "Method 5" under "representative conditions." 40 C.F.R. §§ 60.11(a), 60.40(a)(1), 60.46(a) and (b)(2) (Reg. App. PNM-1813E).

17. The Subpart D limit on opacity is "20 percent opacity except for one six-minute period per hour of not more than 27 percent opacity" as determined by EPA Method 9 and the procedures in § 60.11. 40 C.F.R. §§ 60.11(b), 60.42(a)(2) and 60.42(a) and (b)(3) (Reg. App. PNM-1813E).

18. The opacity standard is expressed, and COMS data are recorded under the NSPS, to the nearest 1 percent opacity. 40 C.F.R. § 60.13(h) (Reg. App. PNM-1813D). Accordingly, based on conventional rounding procedures, opacity readings of 20.50 percent or less cannot provide the basis for a finding of violation. (Trial Stipulation, p. 495)

19. Opacity readings of "portions of plumes which contain condensed, uncombined water vapor shall not be used for purposes of determining compliance with opacity standards." 40 C.F.R. § 60.11(e)(1) (Reg. App. PNM-1813D) Accordingly, opacity readings that are taken when there is condensed, uncombined water vapor in the stack cannot provide the basis for a finding of violation.

20. "Uncombined water" is water that is physically (not chemically) adhered to a particulate matter or another substance and thus would evaporate when heated in a Method 5 sampling train.

21. The NSPS opacity standards, including the Subpart D standard, do not apply during periods of "startup, shutdown, malfunction, " as defined in § 60.2. 40 C.F.R. § 60.11(c) (Reg. App. PNM-1813D). Accordingly, opacity readings that occur during periods of "startup, shutdown, or malfunction" cannot provide the basis for a finding of violation.

22. San Juan Units 1, 3 and 4 are subject to a New Mexico regulation that establishes a PM limit of 0.05 lbs. per million Btu for coal burning equipment with rated heat rate capacity greater than 250 million Btu. 20.2.14 NMAC. However, stationary combustion sources, like San Juan Units 1, 3 and 4, that are subject to a state limitation on PM are exempt from opacity regulation by the state. 20.2.61 NMAC.

23. Accordingly, the only opacity standard applicable to San Juan units 1, 3 and 4 is the Subpart D opacity standard.

The Compliance Method

24. To determine compliance with the Subpart D opacity standard, source owners and operators are required to conduct Method 9 tests with a minimum observation time of 3 hours (30 six-minute averages) during PM performance testing, or, at the source owner or operator's election, submit COMS data collected during the duration of the PM emissions testing. 40 C.F.R. § 60.11(b) and (e)(1) and (5) (Reg. App. PNM-1813D).

25. There is no provision in the NSPS authorizing the use of COMS data by itself to determine compliance during periods other than PM performance testing. According to Subpart A, although COMS data may be considered "probative" of the actual opacity of an emission, they are not conclusive evidence, and Method 9 data are controlling even during periods when COMS data are submitted to determine compliance. 40 C.F.R. § 60.11(e)(1) and (5) (Reg. App. PNM-1813D; Reg. App. PNM-1813O; Reg. App. PNM-1816).

26. A source that records opacity above the 20 percent standard (whether with Method 9 or COMS) during PM performance testing without violating the PM standard is entitled to apply for "appropriate adjustment" of the opacity standard if the controls were properly operated to minimize emissions during the test and could not be adjusted or operated to eliminate the exceedance -- *i.e.*, if the opacity exceedances were unavoidable even with properly operated controls. 40 C.F.R. § 60.11(e)(6) (Reg. App. PNM-1813D; Reg. App. PNM-1816).

27. Opacity is not itself a concern under the NSPS unless it indicates an

exceedance of the PM standard or improper operation of PM controls.

28. Despite explicit provisions establishing Method 9 as the compliance method and limiting the circumstances under which COMS may be used to determine compliance, Subpart A § 60.11(g) also states that the regulations do not preclude the use of other "credible evidence" or information to establish whether a source "would have been in compliance with applicable requirements if the appropriate performance compliance test or procedure had been performed." 40 C.F.R. § 60.11(g) (Reg. App. PNM-1813D; Reg. App. PNM-1813S).

29. Because the compliance test procedure specified for Subpart D is performance of a Method 9, "credible evidence" can only be used to establish a violation if those data demonstrate that a Method 9 would have been failed had it been performed. 40 C.F.R. § 60.11(g) (Reg. App. PNM-1813D; Reg. App. PNM-1813S).

30. Plaintiffs presented no evidence that a Method 9 test would have been failed. (Trial Transcript)

Continuous Opacity Monitoring Systems (COMS)

31. Subpart D sources must install and operate COMS at all times "except for monitor breakdowns, repairs, calibration checks, and zero and span adjustments." 40 C.F.R. § 60.13(e) and 60.45(a) (Reg. App. PNM-1813D; Reg. App. PNM-1813E).

32. The Subpart D COMS must meet the manufacturers' design, source installation criteria, and initial calibration and alignment requirements of PS-1. 40 C.F.R. § 60.13(d)(1) (Reg. App. PNM-1813D).

33. COMS installed after March 30, 1983, but before April 9, 2001, are subject to the 1983 version of PS-1 promulgated at 48 Fed. Reg. 13322. COMS installed

before March 30, 1983 are subject to certain provisions of the 1983 version, but were not required by the revision to require any additional testing to show compliance with the revised version. 48 Fed. Reg. 13322 (Reg. App. PNM-1823).

34. PS-1 establishes initial performance specifications that define allowable error. 48 Fed. Reg. 13322 (Reg. App. PNM-1823).

35. Following PS-1 certification, the only frequent quality assurance required under Subpart A for the COMS is the daily calibration drift standard of twice the applicable performance specification of 2% (i.e., must be adjusted if the calibration has drifted by more than 4% opacity). 40 C.F.R. § 60.13(d) (Reg. App. PNM-1813D).

36. Although EPA has recently proposed additional regulatory quality assurance/quality control requirements for COMS that are used "to determine compliance," the NSPS currently does not impose any such standards. 68 Fed. Reg. 24692 (Reg. App. PNM-1875).

Excess Emissions Reporting

37. Any six-minute period in which COMS record data in excess of the 20 percent opacity standard must be reported as "excess emissions," even though the standard may not apply to the reading due to the "startup, shutdown, or malfunction" exclusion or other reasons. 40 C.F.R. § 60.46(g)(1) (Reg. App. PNM-1813E).

38. Subpart D sources are required to identify in those reports whether the periods of "excess emissions" coincided with periods of "startup, shutdown, or malfunction," to describe the "nature and cause of any malfunction (if known)," and to report causes and corrective action. 40 C.F.R. §§ 60.7(c) and 60.45(g)(1) (Reg. App. PNM-1813D; Reg. App. PNM-1813E).

39. Although "excess emission" reports are evaluated by the enforcing agency as an "indicator of the compliance status of the source," to determine if the source is complying with the "general duty" under § 60.11(d), and to otherwise target inspections, they are not, standing alone, used as a direct measure of compliance with the opacity limit. *See, e.g.*, 39 Fed. Reg. 32852 (1974) (Reg. App. PNM-1813M); 50 Fed. Reg. 52115, 53116 (1985) (Reg. App. PNM-1813N); (PNM Exhibit 1830).

40. Nothing in PNM's certified "excess emissions" reports establishes the accuracy of the COMS data for directly determining compliance with the Subpart D opacity standard or establishes comparability of the COMS data to Method 9.

Operating Permit P062

41. The 1990 CAA amendments established an operating permit program for major stationary sources that requires the incorporation of all CAA "applicable [federal] requirements" under one permit issued by states under EPA approved programs. CAA §§ 502, 504 (Reg. App. PNM-1813B).

42. Title V does not authorize the imposition of new substantive requirements by EPA or the states. 57 Fed. Reg. 32250, 32251 (1992) (Reg. App. PNM-1813Q).

43. The NSPS are an "applicable requirement" that must be incorporated into the Title V Operating Permit of any source subject to NSPS. 40 C.F.R. Section 70.2 (Reg. App. PNM-1813H).

44. When read together, Operating Permit P062 and NSR Permit 63-M-2 provide that opacity compliance is to be determined pursuant to 40 C.F.R. Part 60, Appendix A, which makes clear that the Subpart D opacity standard does not apply during periods of "startup, shutdown, or malfunction" or to opacity due to condensed

water vapor, and specifies EPA Method 9 as the applicable compliance method. (Plaintiffs' Ex. 2; PNM-1829)

45. Condition 3.4.2.1 of Operating Permit P062 reflects PNM's decision to use its COMS data to determine compliance with the opacity standard during the annual PM performance testing required under Condition 3.4.1.6 consistent with § 60.11(e)(5), but does not otherwise establish COMS as the conclusive method for determining compliance.

46. New Mexico does not have authority under the CAA to revise the Subpart D, NSPS, or its compliance methods. Only the Administrator can approve equivalent or alternative compliance methods. CAA § 111; 40 C.F.R. § 60.8(b) (Reg. App. PNM-1813A; Reg. App. PNM-1813D).

47. New Mexico law authorizes NMED to adopt standards of performance for sources, but limits those standards to being "no more stringent than but at least as stringent as federal standards of performance." NMSA 1978, § 74-2-5.C (1992) (Reg. App. PNM-1813C).

48. Interpretation of the Operating Permit P062 as establishing COMS data as the conclusive means of determining compliance for periods other than PM performance testing would be inconsistent with New Mexico law. NMSA 1978, § 74-2-5.C (1992) (Reg. App. PNM-1813C). EPA Method 9 is the applicable compliance method under both Subpart D and Operating Permit P062.

"Equivalency" of COMS and Method 9

49. Under the "credible evidence" rule, in order to establish a violation of the Subpart D opacity standard based on COMS data, Plaintiffs bear the burden of

establishing for each alleged violation that a Method 9 test would have been failed had it been performed.

50. COMS readings in excess of 20 percent do not by themselves establish that an EPA Method 9 test would also be failed.

51. Method 9 explicitly recognizes that potential errors "must be taken into account when determining possible violations of applicable opacity standards." Method 9, *Introductory material* (Reg. App. PNM-1813G). *This is a fundamental element of* Method 9 that must be applied when applying the "credible evidence" rule to Method 9.

52. In order to establish with COMS data that a Method 9 would have been failed, the Plaintiffs must establish at a minimum that the amount of the exceedance is greater that the potential cumulative measurement error of the COMS or 7.5 percent opacity.

53. In order to establish with COMS data that a Method 9 test would have been failed, the Plaintiffs must also establish that the amount of the exceedance is greater than the allowed 7.5 percent difference in readings between a recently calibrated COMS and a Method 9 reader during certification.

54. Because Method 9 requires that opacity readings be taken "in that portion of the plume where condensed water vapor is not present," 40 C.F.R. Part 60, Appendix A, Method 9, § 2.3 (Reg. App. PNM-1813G), in order to establish with COMS data that a Method 9 test would have been failed, Plaintiffs must establish that the COMS were not reading condensed water vapor.

55. The combination of potential low Method 9 readings from a certified reader (up to 7.5% absolute error), the potential high bias of a PS-1 certified COMS as

installed, the documented accuracy problems with San Juan's COMS, the data comparing San Juan's own COMS to Method 9, and the documented interference in COMS measurements by condensed water vapor are sufficient to demonstrate that Plaintiffs have not shown by means of the COMS data in PNM's "excess emissions" reports that it is more likely than not that a Method 9 would have been failed for any particular six-minute period in PNM's "excess emissions" reports.

Achievability of the Subpart D Opacity Standard

56. Because the CAA requires that NSPS be achievable with the technology upon which the standard was based, the Subpart D opacity standard must be achievable with an ESP.

57. Because EPA did not review opacity data collected under all operating conditions when it established the Subpart D opacity standard, EPA has not established that the Subpart D standard is achievable under all operating conditions with an EPS.

58. Because EPA did not review continuous opacity data collected with COMS when it established the Subpart D opacity standard, EPA has not established that the Subpart D standard is achievable during each six-minute period measured by a COMS.

59. Because monitoring continuously with COMS under all operating conditions could result in many more exceedances than monitoring with Method 9 "once a day, or less," it is reasonable to require some adjustment of the standard to ensure that it is not more restrictive when enforced with COMS data. *National Parks Conservation Assoc., Inc. v. TVA*, 175 F.Supp.2d 1071 (E.D. Tenn. 2001).

60. EPA's failure to demonstrate the achievability of the Subpart D standard

as measured at all times with a COMS creates inherent limitations on the lawful use of COMS data to establish violations under the "credible evidence" provisions on § 60.11(g).

61. Consistent with the provisions in § 60.11(e)(5) for establishment of an alternative opacity limit, the "credible evidence" rule cannot lawfully be used to establish a violation in cases where exceedances measured by the COMS could not be avoided by proper operation of an ESP. Any other result would render the NSPS unachievable.

62. In order to establish a violation of the Subpart D opacity standard using COMS as "credible evidence" of a Method 9 violation, Plaintiffs bear the burden of proving for each six-minute opacity reading in excess of the Subpart D standard that is not due to "startup, shutdown, or malfunction" that the exceedance nonetheless could have been avoided.

Conclusions Regarding Plaintiffs' Case

63. Plaintiffs have not met their burden of demonstrating based on PNM's "excess emissions" reports that a Method 9 would have been failed for any of the periods covered in Plaintiffs' complaint.

64. Plaintiffs' have not established that the opacity standard was violated.

Conclusions Regarding Liability For Individual Six-Minute Periods If A Second Part Of The Liability Phase Of This Trial Is Necessary

65. No individual six-minute COMS reading less than 20.50 percent opacity (*i.e.*, that could be rounded down to 20 percent using conventional rounding procedures) can provide the basis for liability in the second part of the liability phase of this case.

66. No individual six-minute COMS reading that is selected by PNM for exclusion as the allowed single six-minute period in the hour between 20 percent and

27.50 percent can provide the basis for liability in the second part of the liability phase of this case.

67. No individual six-minute COMS reading recorded under saturated stack conditions (*i.e.*, under conditions leading to condensed water vapor) can provide the basis for liability in the second part of the liability phase.

68. No individual six-minute COMS reading recorded during conditions of "startup, shutdown, or malfunction" can provide the basis for liability in the second part of the liability phase of this case.

69. In the two cases (Finding Nos. 133-137) where PNM identified in its quarterly "excess emissions" reports a specific potential positive bias in the reported COMS data, the individual six-minute COMS readings recorded during those periods must be adjusted downward to account for that positive bias before they can provide the basis for liability in the second part of the liability phase.

70. No individual six-minute COMS reading that fails to exceed the opacity standard by the potential absolute error allowed during Method 9 certification (*i.e.*, a reading that is 27.5 percent or less) can provide the basis for liability in the second part of the liability phase.

71. No individual six-minute COMS reading that fails to exceed the opacity standard by the cumulative potential positive system measurement error of COMS (*i.e.*, a reading that is 27.5 percent or less) can provide the basis for liability in any second part of the liability phase.

72. No individual six-minute COMS reading that did not occur during "startup, shutdown, or malfunction" can provide the basis for liability in any second part

of the liability phase unless Plaintiffs' demonstrate that the exceedance could have been avoided.

Respectfully submitted,

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CERTIFICATE OF SERVICE

THIS WILL CERTIFY that on December 22, 2003, a true and correct copy of PNM's Final Proposed Findings of Fact and Conclusions of Law was e-mailed and mailed first class through the United States Postal Service to:

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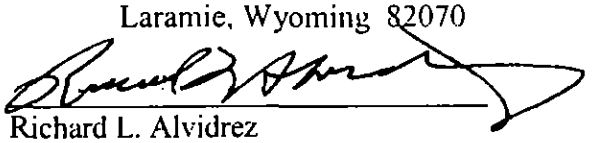
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